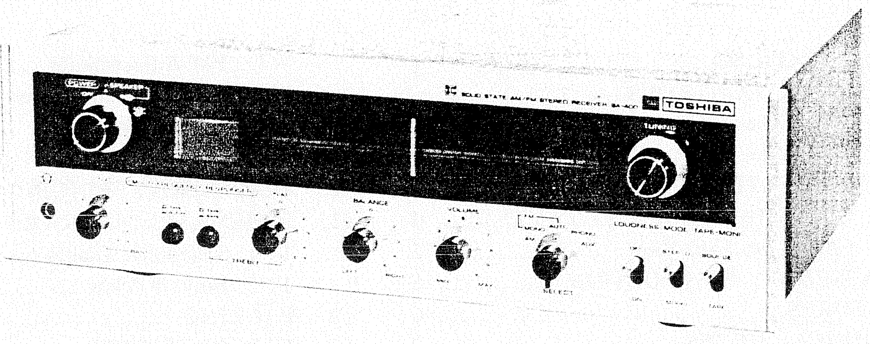
TOSHIBA AM/FM STEREO RECEIVER
SERVICE DATA
MODEL SA-400

FILE NO. 170-004



1. SPECIFICATIONS

FM tuner section

Antenna input impedance:	300 ohms (balanced) 75 ohms (unbalanced)
Usable sensitivity (IHF):	2.5μV
Harmonic distortion:	less than 0.6% (Mono, 400 Hz, 100% modulation) less than 0.9% (Stereo, 400 Hz, 100% modulation)
Signal-to Noise ratio:	better than 60 dB
FM-stereo separation:	better than 45 dB (400 Hz)
Capture ratio (IHF):	less than 2 dB
Tuning indication:	tuning meter

AM tuner section

Usable sensitivity (IHF):	20μV
Image rejection ratio:	35 dB
IF rejection ratio:	30 dB
Antenna:	Built-in ferrite core antenna
Tuning indication:	tuning meter

Audio section

Total IHF music power output (0.8% distortion):	30 Watts (4 ohms) 40 Watts (8 ohms) 20 Watts (16 ohms)	
Total r.m.s. continuous power output (0.8% distortion):	22 Watts (4 ohms) 30 Watts (8 ohms) 18 Watts (16 ohms)	
Harmonic distortion:	0.8% (at rated power output) 0.2% (at 1 W/1 W output)	
Intermodulation distortion:	0.8% (at rated power output) 0.2% (at 1 W/1 W output)	
Input sensitivity and impedance and S/N:	PHONO 47 Kohm, 3mV, 65 dB AUX 100 Kohm, 200mV, 75 dB Main input 200mV	
Recording output level:	200mV (PIN jack) 30mV (DIN jack)	
Resial noise:	1mV	
Speaker impedance:	4–16 ohm	
MFR response:	100 Hz	± 10 dB (TURN OVER FREQUENCY 1 KHz) ± 5 dB (TURN OVER FREQUENCY 400 Hz)
	10,000 Hz	± 10 dB (TURN OVER FREQUENCY 1 KHz) ± 5 dB (TURN OVER FREQUENCY 4 KHz)
Loudness control:	+10 dB (100 Hz, VR at 30%)	
Power source:	TA, TC, VL Model 100/120/220/240 V, 50/60 Hz TE Model 100/110 ~ 120/220/240 V, 50/60 Hz DTE, DSE Model 110/120/220/240 V, 50/60 Hz	
Power consumption:	55W (at maximum output) 15W (at minimum output)	

Dimensions	
net	16½ (W) x 11¼ (D) x 4½ (H) (inch)
gross	21 (W) x 15½ (D) x 8¼ (H) (inch)

Weight	
net	14½ lbs
gross	17¾ lbs

TOKYO SHIBAURA ELECTRIC CO., LTD.

2-1, 5-CHOME, GINZA, CHUO-KU, TOKYO, JAPAN

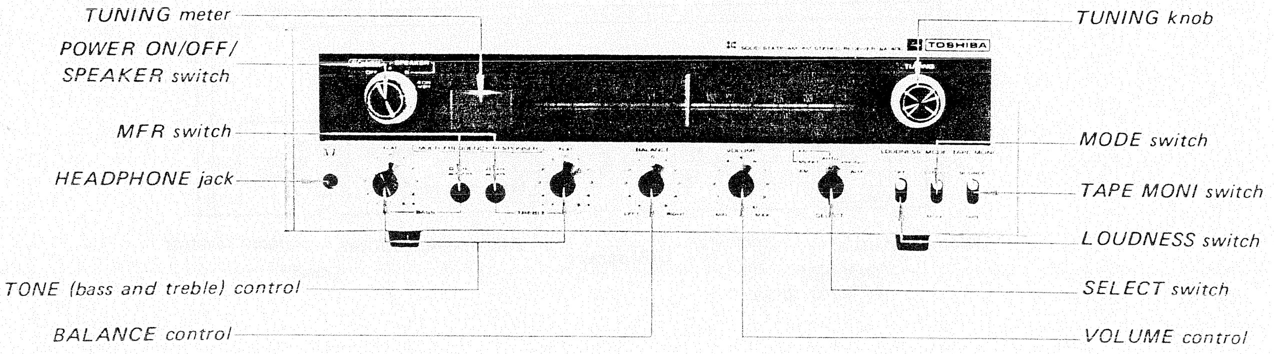
TABLE OF CONTENTS

Page

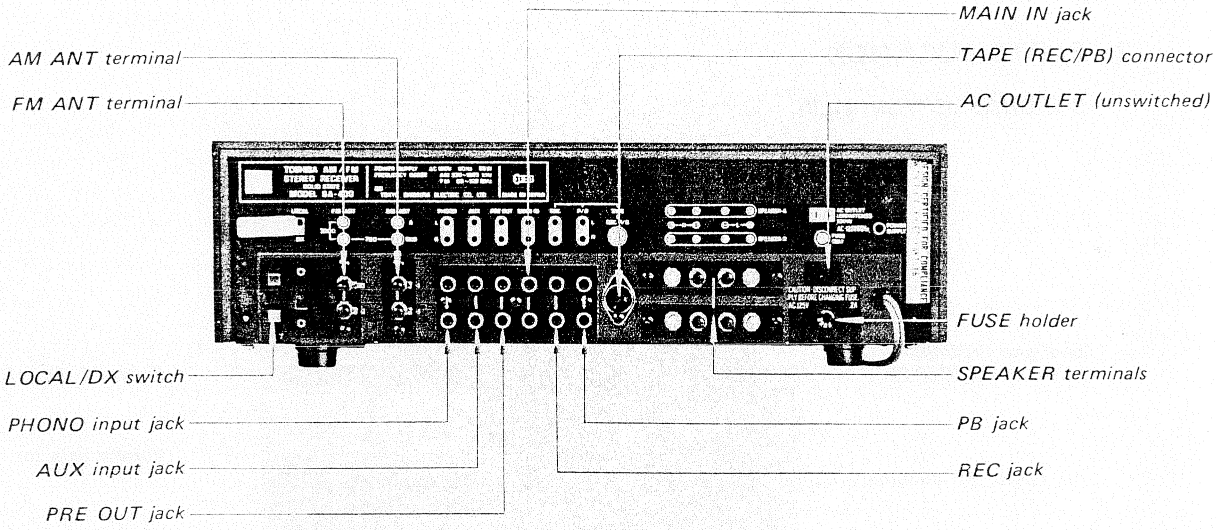
1. SPECIFICATIONS 1
2. OPERATING CONTROLS
   2-1. Front View 3
   2-2. Rear View .... 3 – 4
3. PARTS LOCATION
   3-1. Chassis Top View 4
   3-2. Chassis Bottom View 5
4. DISASSEMBLY INSTRUCTION 5
5. FEATURES 6
6. TECHNICAL NOTES .... 6 – 7
7. CIRCUIT ADJUSTMENTS
   7-1. AM Adjustments 8
   7-2. FM Adjustments 9
   7-3. FM MPX Adjustments 10
8. BLOCK DIAGRAM 11
9. VOLTAGE OF EACH POINTS 12
10. DIAL CORD STRINGING 12
11. SCHEMATIC DIAGRAMS
    11-1. Schematic Diagrams .... 13 – 14
    11-2. Bottom View .... 15 – 17
12. PACKING 18
13. EXPLODED VIEW .... 19 – 21
14. PARTS LIST .... 22 – 27

2. OPERATING CONTROLS

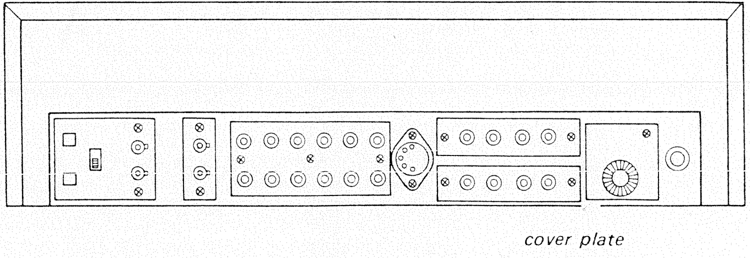
2-1. FRONT VIEW


TUNING meter
POWER ON/OFF/ SPEAKER switch
MFR switch
HEADPHONE jack
TONE (bass and treble) control
BALANCE control
TUNING knob
MODE switch
TAPE MONI switch
LOUDNESS switch
SELECT switch
VOLUME control
TOSHIBA

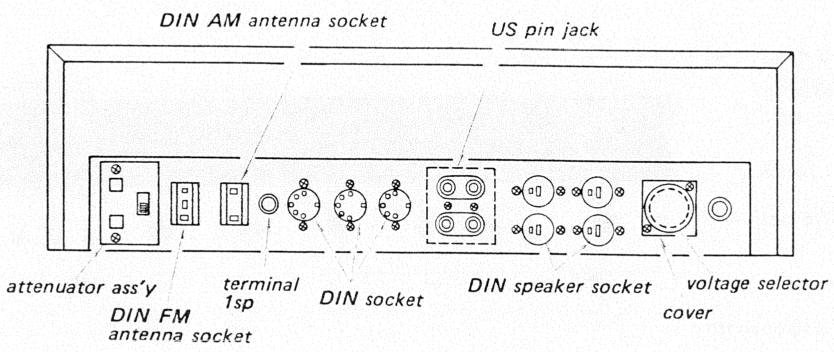
2-2. REAR VIEW


MAIN IN jack
AM ANT terminal
TAPE (REC/PB) connector
FM ANT terminal
AC OUTLET (unswitched)
FUSE holder
LOCAL/DX switch
SPEAKER terminals
PHONO input jack
PB jack
AUX input jack
REC jack
PRE OUT jack

TA, TC, VL MODEL


cover plate

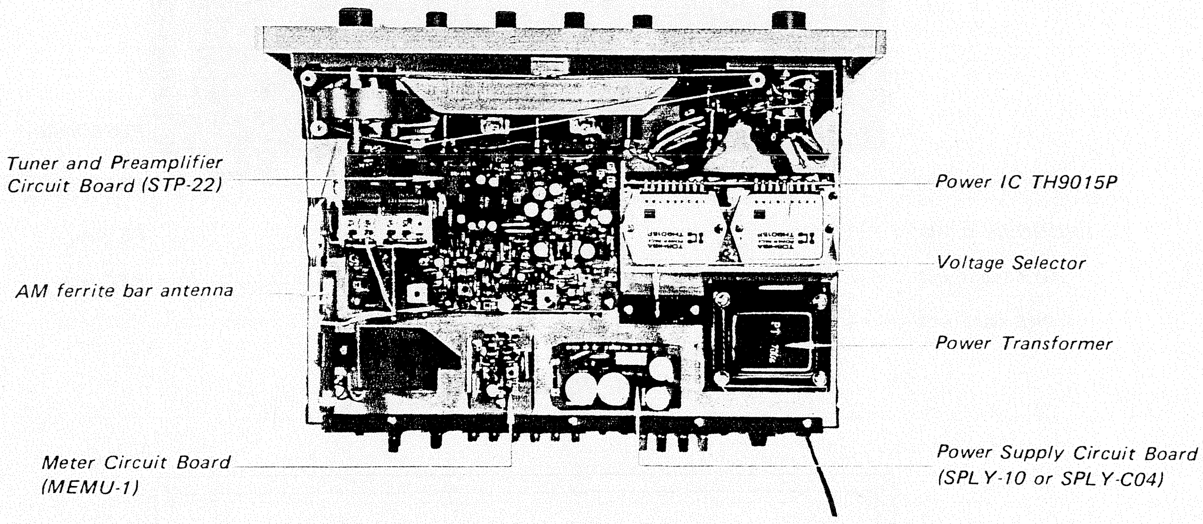
TE MODEL


DIN AM antenna socket
US pin jack
attenuator ass'y
DIN FM antenna socket
terminal 1sp
DIN socket
DIN speaker socket
voltage selector cover

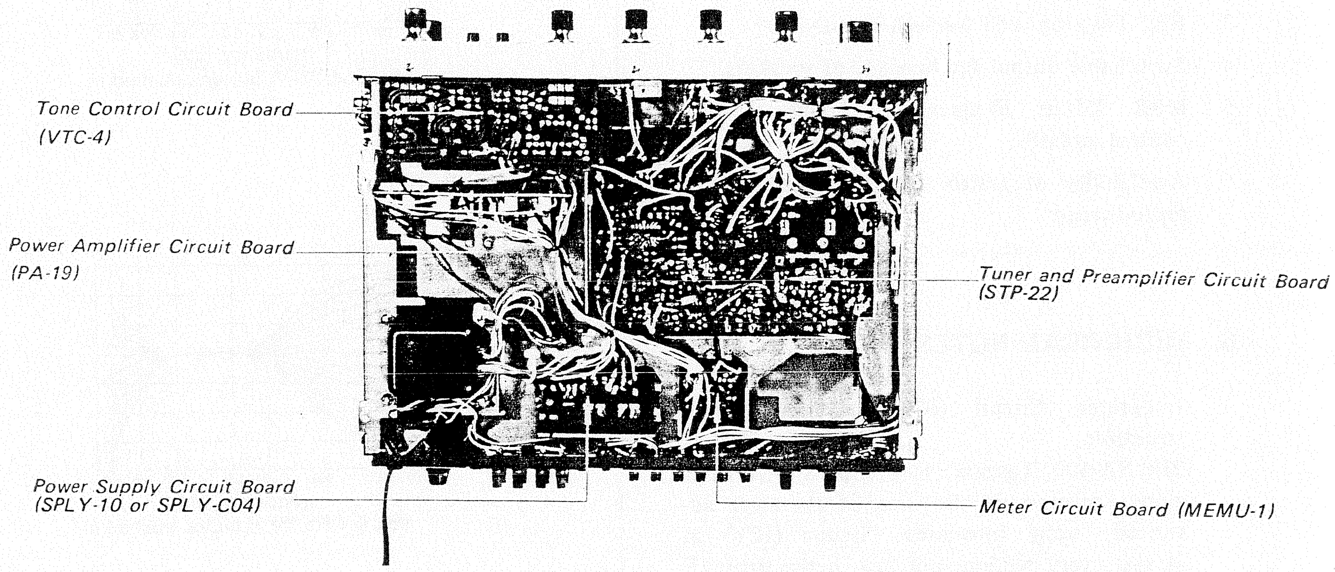
DTE, DSE MODEL

3. PARTS LOCATION

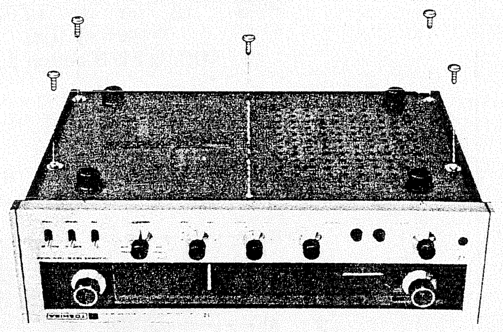
3-1. CHASSIS TOP VIEW

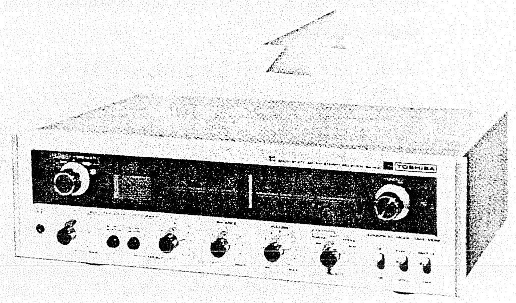

Tuner and Preamplifier Circuit Board (STP-22)
AM ferrite bar antenna
Meter Circuit Board (MEMU-1)
Power IC TH9015P
Voltage Selector
Power Transformer
Power Supply Circuit Board (SPLY-10 or SPLY-C04)

3-2. CHASSIS BOTTOM VIEW


Tone Control Circuit Board
(VTC-4)
Power Amplifier Circuit Board
(PA-19)
Power Supply Circuit Board
(SPLY-10 or SPLY-C04)
Tuner and Preamplifier Circuit Board
(STP-22)
Meter Circuit Board (MEMU-1)

4. DISASSEMBLY INSTRUCTION





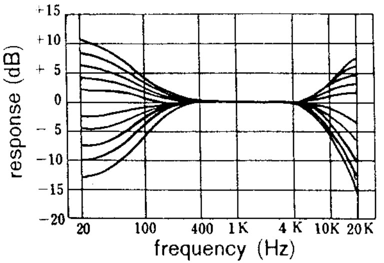
1. Remove the five screws.
2. Pull out the cabinet.

5. FEATURES

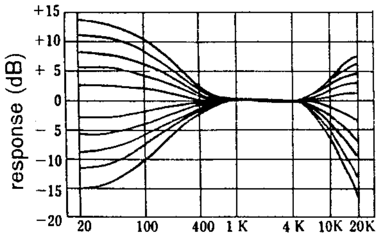
1. Full undistorted 30W rms power output by SEPP-OTL-OCL circuits.
2. High performance plus high reliability by IC application in IF multiplex decoder, equalizer, and power amplifier circuits.
3. FET FM front end for high sensitivity.
4. Switchable output for two sets of speakers.
5. MFR (Multi Frequency Responser) tone control circuit.
6. Availability of matrix type 4 channel stereo reproduction.

6. TECHNICAL NOTES

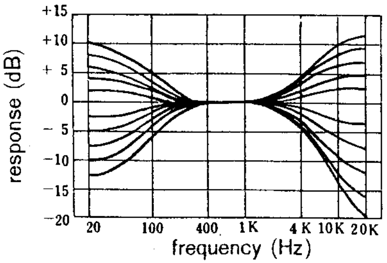
1. Integrated Circuit (IC) solid state construction.
   The SA-400, Toshiba's least expensive AM/FM stereo receiver is also one of its most advanced, using Integrated Circuits (IC's) in almost every section: not just in the tuner IF sections, but in the multiplex circuits, the phono preamp and, for the first time ever in a high fidelity receiver, in the power output stage, as well.
   Even its 30-Watt power output (RMS at 0.8! distortion into 8 ohms-IHF Music Power 40 W) comes from a unique IC output section. And that single-ended, push-pull balanced output circuit is directly coupled to the speakers, with no output transformers or capacitors to cause phase shift or limit frequency response.
2. High Performance FM Tuner.
   FET FM front end has 2.5μV IHF usable sensitivity for good reception of weak stations, plus great overload resistance for strong signal areas.
3. Multi Frequency Responser (MFR)
   MFR is not intended for evaluation of the sound quality of a product, but for free adjustment of playback frequency response to suit the listener's personal taste.
   MFR can vary the sound characteristics in various ways merely by pushing the MFR button and the same time it can serve as a low-cut filter or a high-cut filter. In enjoying a disc, the listener adjusts the sound control to his personal taste or adjusts the sound control to correct the external factors affecting the sound quality, such as the size of the room or the location of the stereo set in it.



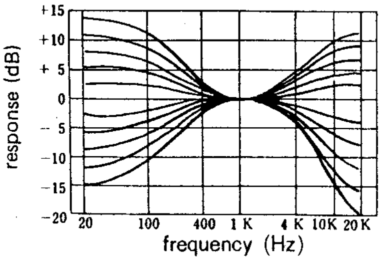
(A) Both MFR buttons pushed in



(B) 4 KHz MFR button pushed in



(C) 400 Hz MFR button pushed in



(D) Both MFR buttons not pushed in

Fig. 1. Shows effect MFR

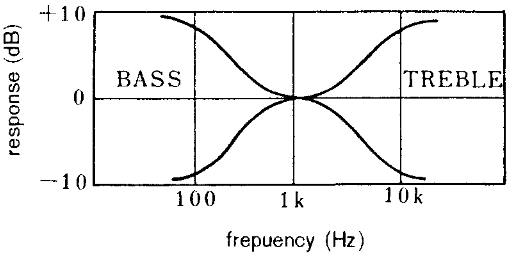


Fig. 2. Shows general tone control curve

4. Connection for 4-channel adapter
   At the "4 CH ADP" setting, the preamplifier and power amplifier sections are disconnected, so that you may connect a 4 channel adaptor between the preamplifier output and the power amplifier input for enjoying 4 channel sound from normal stereo discs.
   For details, please refer to the owner's manual of the 4 channel adaptor.

MODEL DESCRIPTION

TA:	For U.S.A.
TC:	For Canada
TE:	For Europe
DTE:	For Europe (DIN type connector modified)
DSE:	For Europe (SEMKO approval)
VL:	For other all country except special

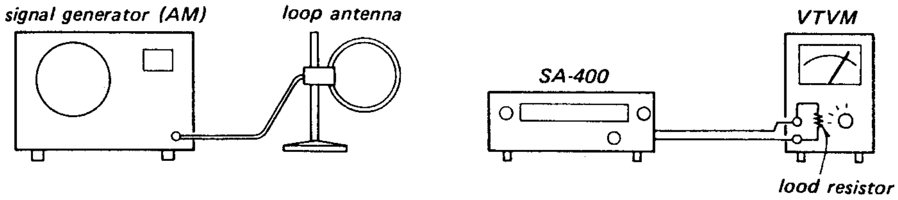
7. CIRCUIT ADJUSTMENTS

7-1. AM ADJUSTMENTS

Test Equipments/Tools Required

1. Signal generator (Rf)
2. Test loop antenna
3. Dummy load resistor
4. VTVM
5. Adjusting driver
6. Adjusting bar (use to antenna core)

Step	Adjusting circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM
		Input	Output				
1	IF	Connect Signal generator to test loop	Connect VTVM to SP terminal	455 kHz (400 Hz 30% MOD)	Low end of dial Scale at position of no unrequired signal	IT-203 IT-204	Maximum
2	OSC (Frequency Coverage)	Connect Signal generator to test loop	Connect VTVM to SP terminal	520 kHz (400 Hz 30% MOD)	Low end of dial scale	L-201	Maximum
3				1650 kHz (400 Hz 30% MOD)	High end of dial scale	CT-4	
Repeat Step 2 and 3							
4	ANT (Tracking)	Connect Signal generator to test loop	Connect VTVM to SP terminal	600 kHz (400 Hz 30% MOD)	Tune to 600 kHz signal	L-701	Maximum
5				1400 kHz (400 Hz 30% MOD)	Tune to 1400 kHz signal	CT-3	Maximum
Repeat Step 4 and 5							

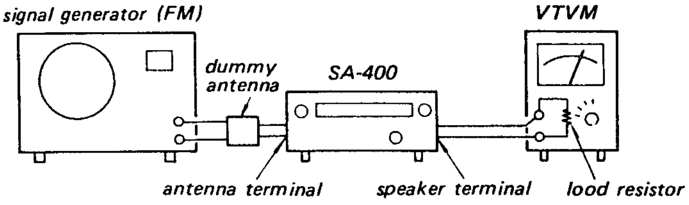


AM IF Alignment, frequency coverage and tracking adjustment test setup.

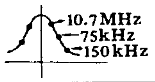
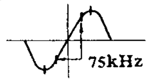
7-2. FM ADJUSTMENTS

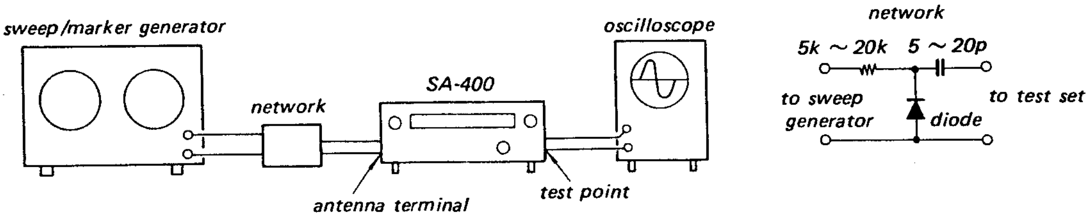
Test Equipments/Tools Required

1. Sweep marker generator
2. Signal generator (Rf)
3. Oscilloscope
4. VTVM
5. FM dummy antenna (300 ohms)
6. Dummy load resistor
7. Network
8. Adjusting driver
9. Adjusting bar


signal generator (FM)
VTVM
dummy antenna
SA-400
antenna terminal
speaker terminal
lood resistor

FM Frequency coverage and tracking adjustment test setup.

Step	Adjusting circuit	Connections		SG frequency	Position of tuning dial	Adjustment	VTVM Oscilloscope
		Input	Output				
1	IF	Connect sweep generator to FM ANT terminal	Connect oscilloscope to test point TP-1	10.7 MHz	Near max. capacity of VC. at position with no unrequired signal	IT201 IT202	 10.7MHz 75kHz 150kHz
2	Radio Det.		Connect oscilloscope to test TP-1			IT205 (secondary)	
3	OSC (Frequency coverage)	Connect to FM signal generator to FM ANT terminal	Connect VTVM to SP terminal	87.5 MHz (400 Hz 30% MOD)	Low end of dial scale	L103	Maximum
4				109 MHz (400 Hz 30% MOD)	High end of dial scale	CT-2	
Repeat Step 3 and 4							
5	RF	Connect FM signal generator to FM ANT terminal	Connect VTVM to SP terminal	90 MHz (400 Hz 30% MOD)	Tune to 90 Hz signal	L101 L102	Maximum
6				108 MHz (400 Hz 30% MOD)	Tune to 108 MHz signal	CT-1	
Repeat Step 5 and 6							


sweep/marker generator
network
SA-400
oscilloscope
antenna terminal
test point
network
5k ~ 20k
5 ~ 20p
to sweep generator
to test set
diode

FM IF adjustment test setup.

7-3. FM MPX ADJUSTMENTS

Test Equipments/Tools Required

1. Signal generator (Rf)
2. Dummy antenna (300 ohms)
3. Stereo modulator
4. Oscilloscope
5. VTVM
6. CR oscillator
7. Dummy load resistor
8. Adjusting driver

Step	Adjusting circuit	Connections		Position of tuning dial	Adjustment	VTVM
		Input	Output			
1	Dabuler & 19 kHz pilot signal	Connect FM stereo SG. to FM ANT. terminal. (see Fig. 7-3-1) 19 kHz signal ON. Sub channel signal ON. add 100 Hz signal from left CH.	Connect VTVM to right SP terminal	98 MHz	T301 T302 T303	Maximum
2	FM stereo signal separation	Connect FM stereo SG. to FM ANT terminal. (see Fig. 7-3-1) 19 kHz signal ON. Main channel, sub channel signal ON. add 1000 Hz signal from left CH.	Connect VTVM to right SP terminal		T301 T302 R303	Minimum
3		Connect FM stereo SG. to FM ANT terminal. (see Fig. 7-3-1) 19 kHz signal ON. Main channel, sub channel signal ON. add 1000 Hz signal from right CH.	Connect VTVM to left SP terminal		T301 T302 R303	Minimum
Repeat Step 2 and 3						

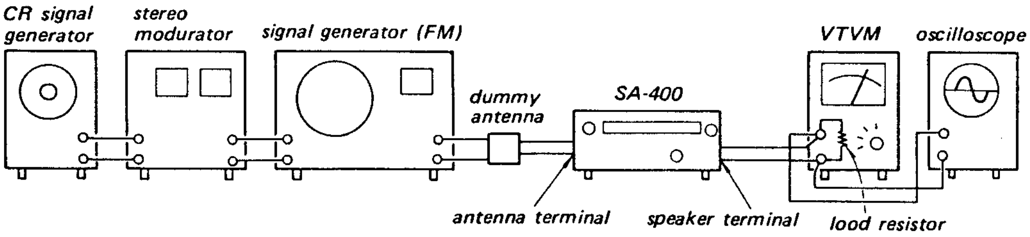
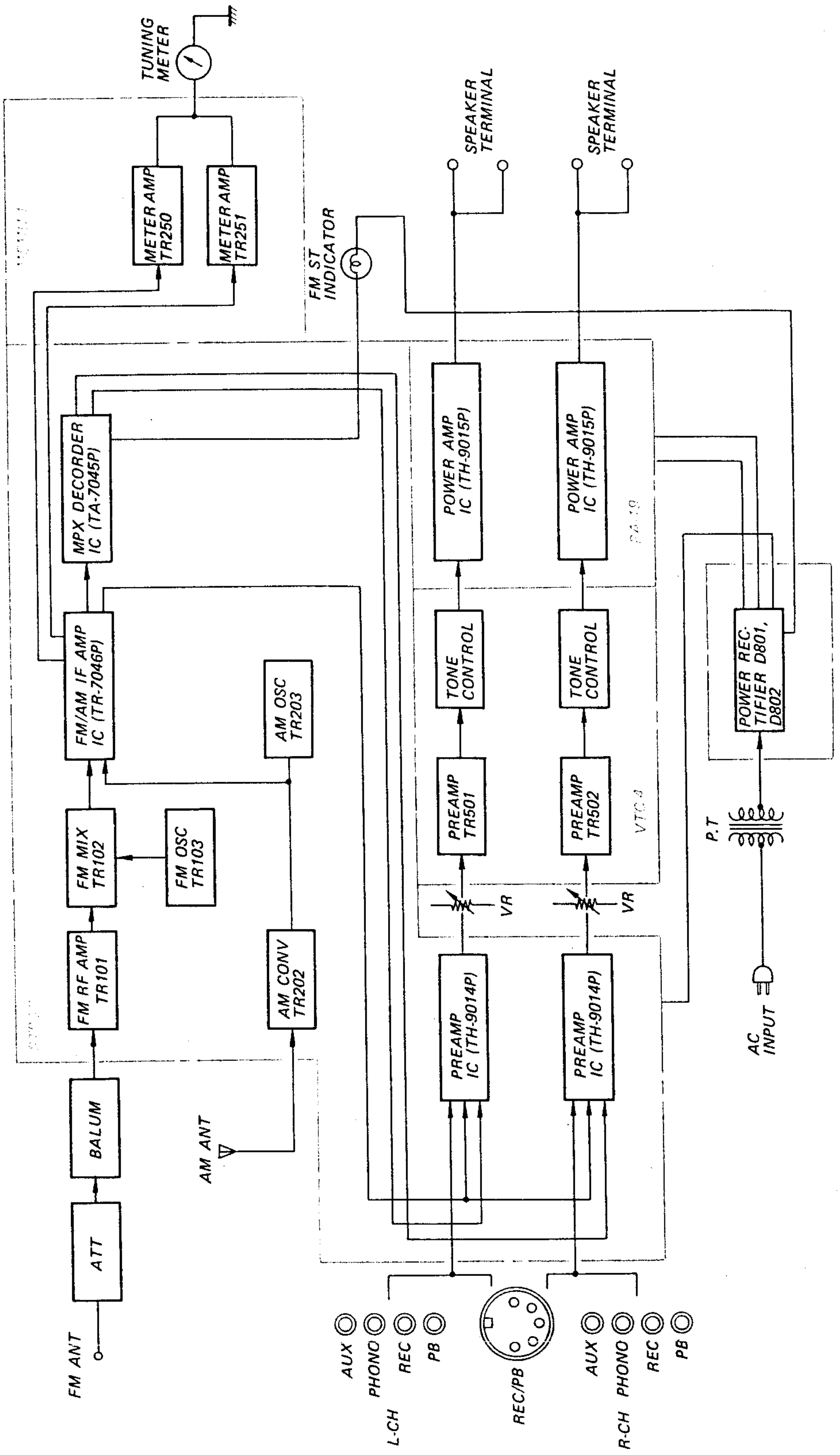

CR signal generator
stereo modurator
signal generator (FM)
VTVM
oscilloscope
dummy antenna
SA-400
antenna terminal
speaker terminal
lood resistor

Fig. 7-3-1.
FM MPX Adjustment test setup.

8. BLOCK DIAGRAM


FM ANT
ATT
BALUM
FM RF AMP TR101
FM MIX TR102
FM OSC TR103
FM/AM IF AMP IC (TR-7046P)
MPX DECORDER IC (TA-7045P)
METER AMP TR250
METER AMP TR251
TUNING METER
AM OSC TR203
AM CONV TR202
AM ANT
FM ST INDICATOR
SPEAKER TERMINAL
SPEAKER TERMINAL
POWER AMP IC (TH-9015P)
POWER AMP IC (TH-9015P)
PA-19
TONE CONTROL
TONE CONTROL
PREAMP TR501
PREAMP TR502
VTC-4
VR
VR
PREAMP IC (TH-9014P)
PREAMP IC (TH-9014P)
POWER RECTIFIER D801, D802
P.T
AC INPUT
AUX
PHONO
REC
PB
L-CH
REC/PB
AUX
PHONO
REC
PB
R-CH

9. VOLTAGE OF EACH POINTS

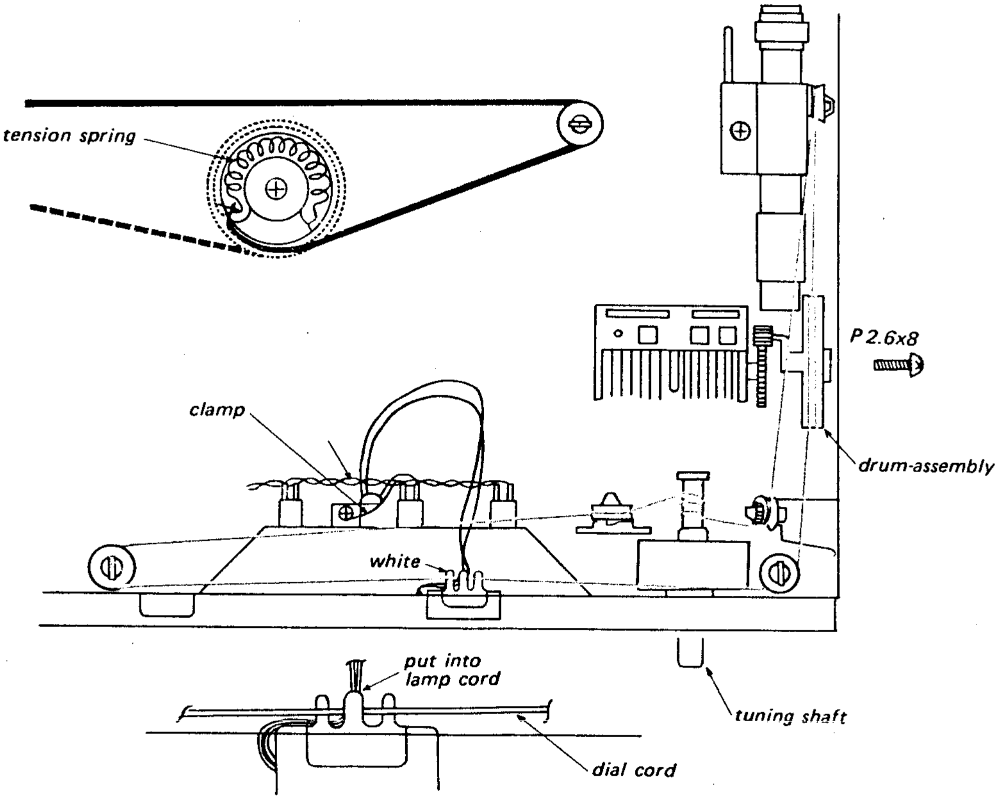
TUNER SECTION

NO.	NAME		VOLTAGE
			V
Tr101	2SK19-Y	S	0.5 ~ 0.9
		D	3.5 ~ 5.5
Tr102	2SC785-R	E	1.6 ~ 3.0
		C	4.5 ~ 7.0
Tr103	2SC394-0	E	1.8 ~ 2.5
		C	4.5 ~ 7.0
Tr201	2SC380-0	E	0.6 ~ 1.4
		C	3 ~ 5
Tr202	2SC941-0	E	0.08 ~ 0.17
Tr203	2SC371	E	1 ~ 3
Tr250	2SC380-0	E	1 ~ 1.2
		C	5.5 ~ 7
Tr251	2SC371-R	E	0.8 ~ 1.4
		C	5.5 ~ 7

AUDIO SECTION

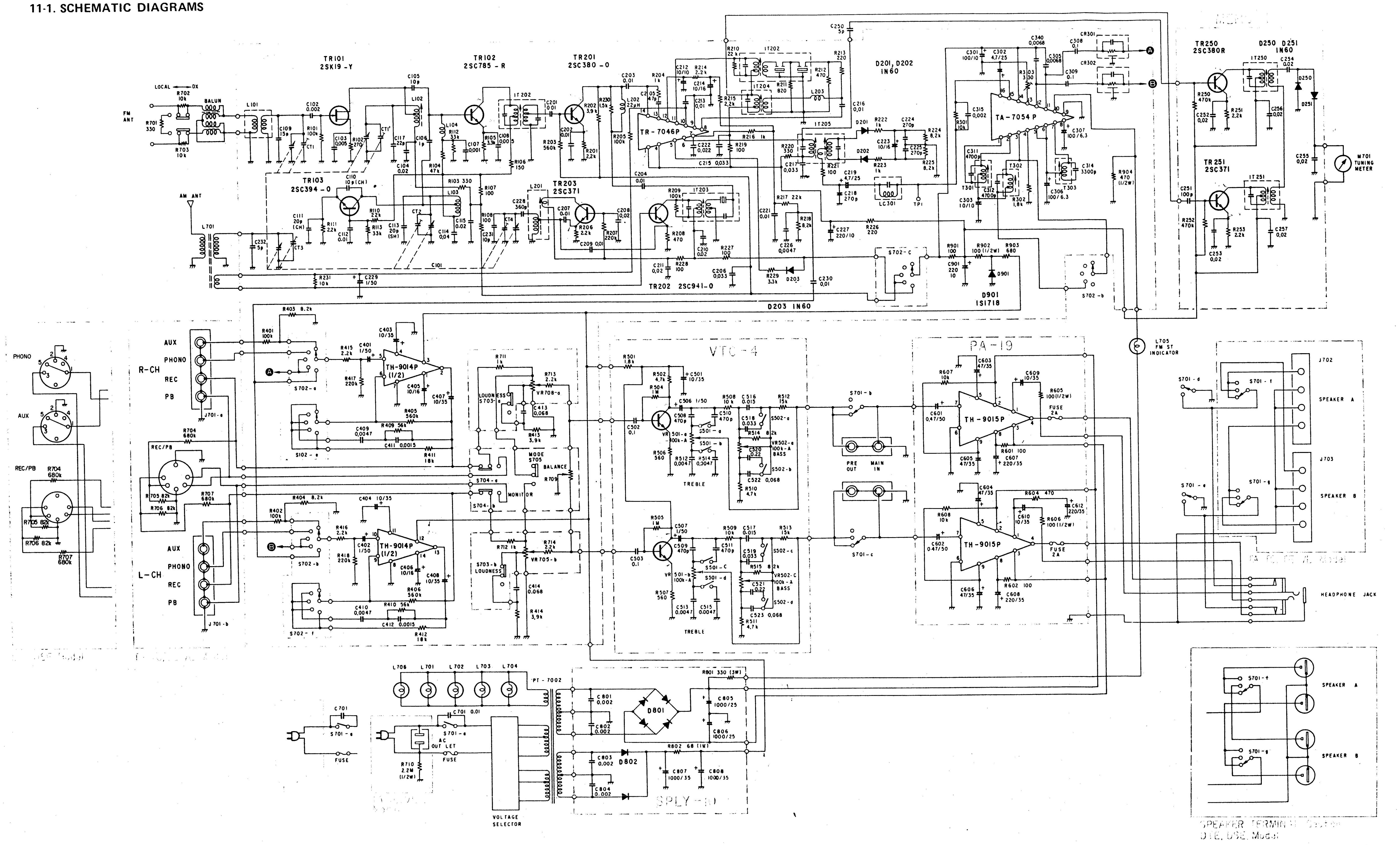
NO.	NAME		VOLTAGE
			V
IC	TA-7046P	1PIN	4.5 ~ 7
IC	TA-7054P	14PIN	3 ~ 6
IC	TH-9014P	3PIN 12PIN	27 ~ 31
IC	TH-9015P	2PIN	+16 ~ 21
		3PIN	−16 ~ 21
Tr501	2SC-1000	E	0.8 ~ 1.2
Tr502	−BL	C	6.4 ~ 9.6

10. DIAL CORD STRINGING


tension spring
P2.6x8
clamp
drum-assembly
white
put into lamp cord
tuning shaft
dial cord

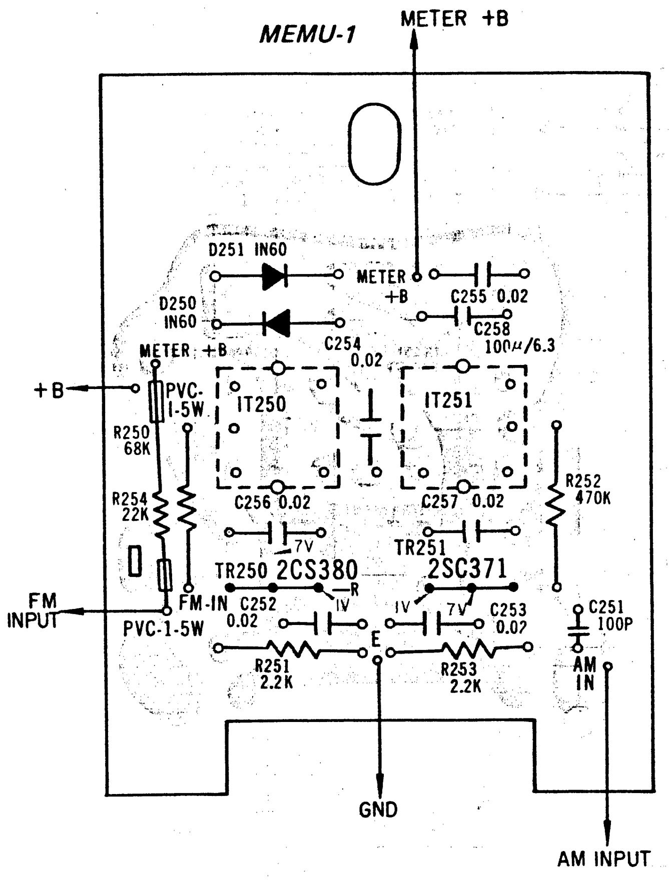
11. SCHEMATIC DIAGRAMS

11-1. SCHEMATIC DIAGRAMS

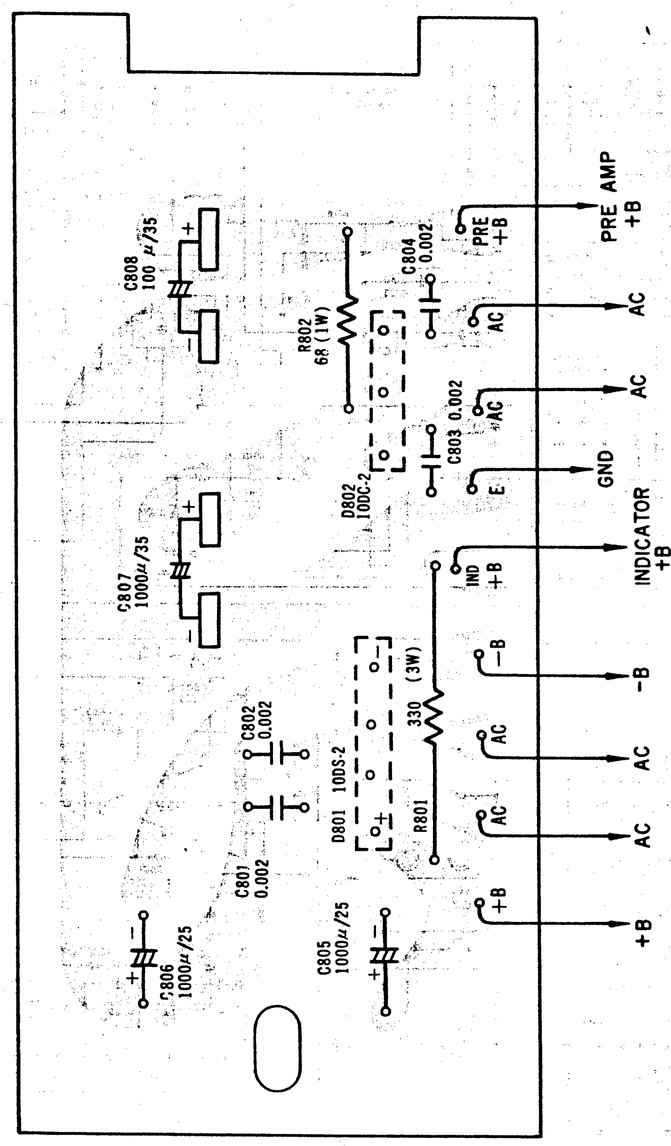

FM ANT
LOCAL DX
BALUN
AM ANT
L701
TR101 2SK19-Y
TR102 2SC785-R
TR103 2SC394-0
TR201 2SC380-0
TR202 2SC941-0
TR203 2SC371
TR-7046P
TA-7054P
D201, D202 1N60
D203 1N60
D901 1S1718
TR250 2SC380R
TR251 2SC371
D250 D251 1N60
M701 TUNING METER
L705 FM ST INDICATOR
IT202
IT203
IT204
IT205
IT250
IT251
LC301
TP1
T301
T302
T303
CR301
CR302
PHONO
AUX
REC/PB
R-CH
L-CH
J701-a
J701-b
S702-a
S702-b
S702-c
TH-9014P (1/2)
S703-a LOUDNESS
S703-b LOUDNESS
VR708-a
VR705-b
MODE S705
BALANCE
MONITOR
S704-a
S704-b
VTC-4
TREBLE
BASS
S501-a
S501-b
S501-c
S501-d
S502-a
S502-b
S502-c
S502-d
VR502-a
VR502-c
S701-b
S701-c
PRE OUT
MAIN IN
PA-19
TH-9015P
FUSE 2A
J702
J703
SPEAKER A
SPEAKER B
S701-d
S701-e
S701-f
S701-g
HEADPHONE JACK
L706 L701 L702 L703 L704
PT-7002
VOLTAGE SELECTOR
AC OUT LET
FUSE
S701-a
C701 0.01
R710 2.2M (1/2W)
D801
D802
R801 330 (3W)
R802 68 (1W)
C805 1000/25
C806 1000/25
C807 1000/35
C808 1000/35
SPLY-10
SPEAKER TERMINAL System
UTE, USE Model

11-2. BOTTOM VIEW

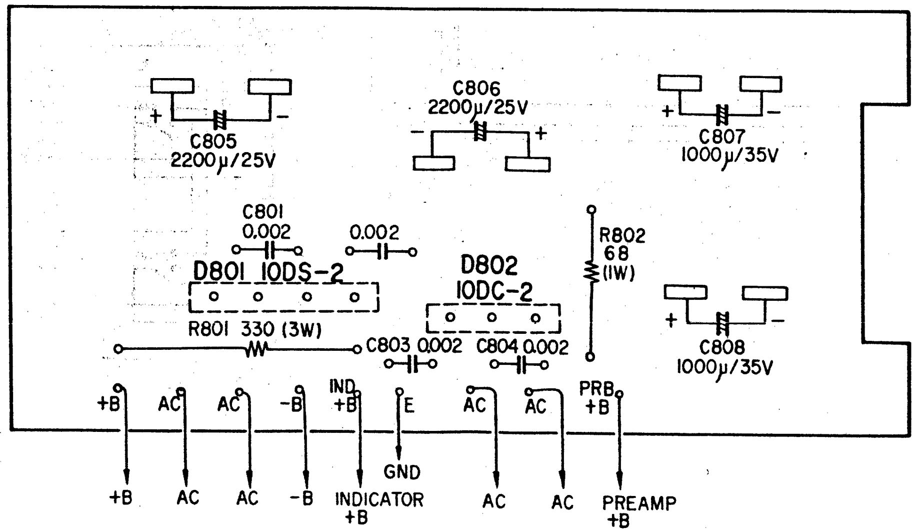
MEMU-1


METER +B
D251 IN60
D250 IN60
METER +B
C255 0.02
C258 100μ/6.3
C254 0.02
METER +B
+B
PVC-1-5W
R250 68K
R254 22K
IT250
IT251
C256 0.02
C257 0.02
R252 470K
TR250 2CS380
TR251 2SC371
FM INPUT
FM-IN
PVC-1-5W
C252 0.02
C253 0.07
C251 100P
R251 2.2K
R253 2.2K
E
AM IN
GND
AM INPUT

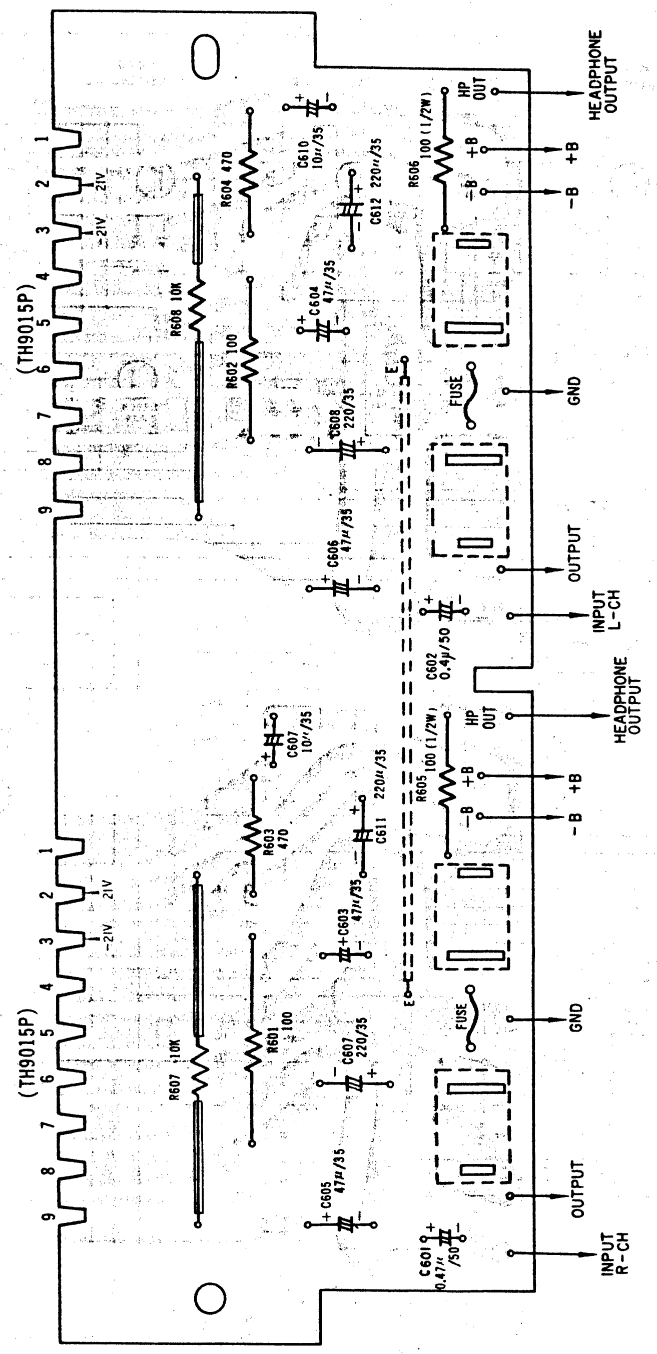
SPLY-10


C808 100μ/35
R802 68 (1W)
C804 0.002
PRE +B
PRE AMP +B
AC
C803 0.002
AC
E
GND
D802 10DC-2
C807 1000μ/35
IND +B
INDICATOR +B
C802 0.002
D801 10DS-2
330 (3W)
R801
-B
AC
AC
C801 0.002
C806 1000μ/25
C805 1000μ/25
+B

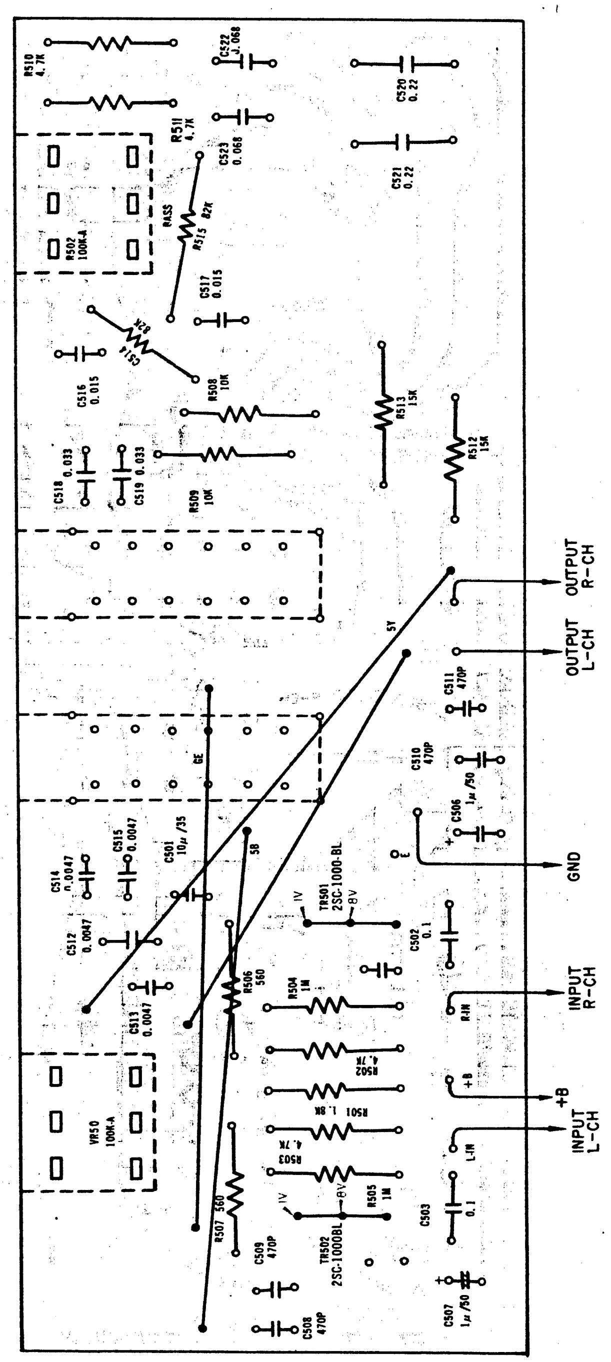
SPLY-CO4


C805 2200μ/25V
C806 2200μ/25V
C807 1000μ/35V
C801 0.002
0.002
D801 10DS-2
D802 10DC-2
R802 68 (1W)
R801 330 (3W)
C803 0.002
C804 0.002
C808 1000μ/35V
+B
AC
AC
-B
IND +B
E
AC
AC
PRB +B
+B
AC
AC
-B
GND
INDICATOR +B
AC
AC
PREAMP +B

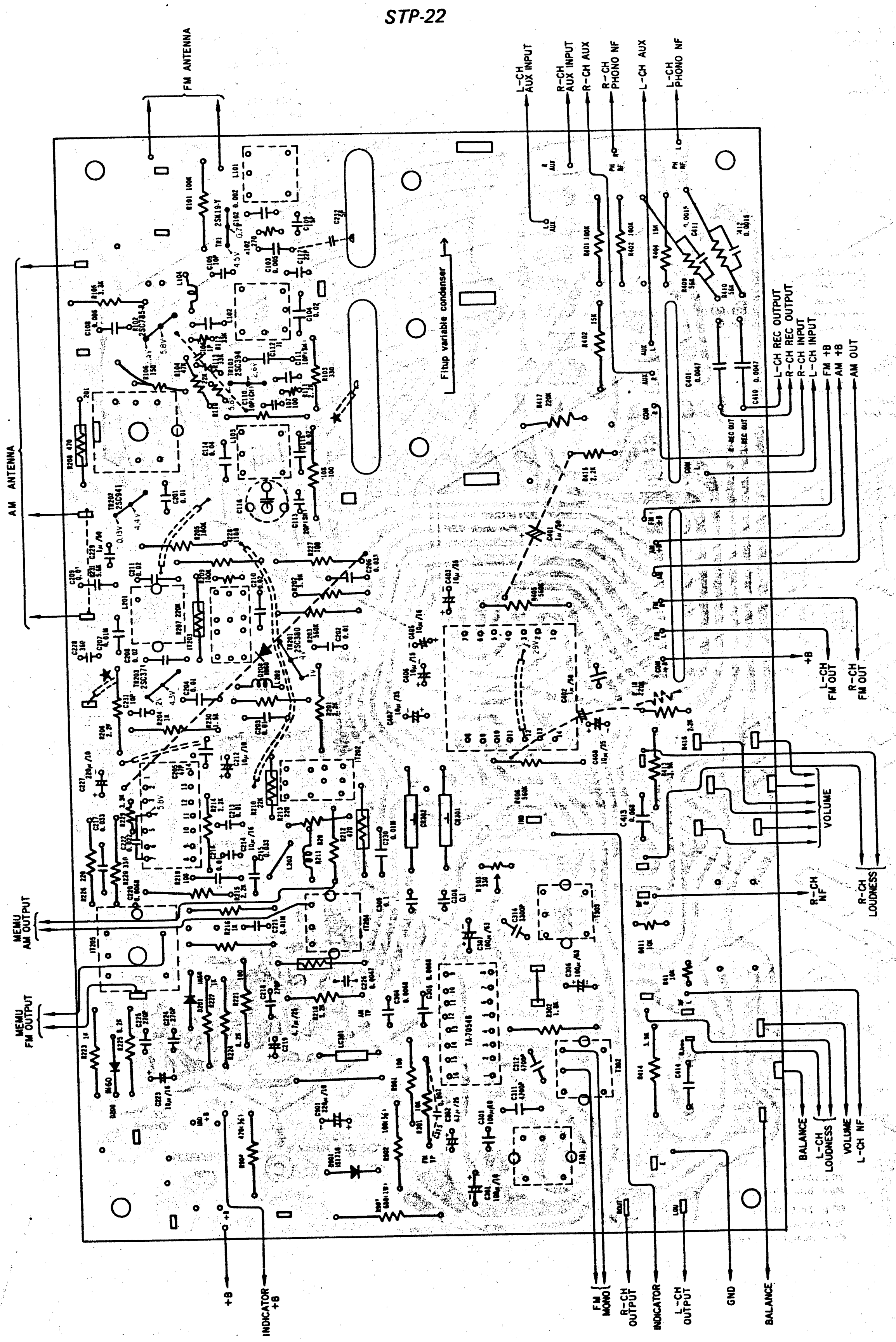
PA-19


(TH9015P)
1
2
3
4
5
6
7
8
9
-21V
21V
R604 470
C610 10μ/35
C612 220μ/35
R606 100 (1/2W)
HP OUT
HEADPHONE OUTPUT
+B
-B
R608 10K
C604 47μ/35
R602 100
C608 220/35
E
FUSE
GND
C606 47μ/35
OUTPUT
C602 0.47μ/50
INPUT L-CH
(TH9015P)
C607 10μ/35
R605 100 (1/2W)
HP OUT
HEADPHONE OUTPUT
R603 470
C611 220μ/35
C603 47μ/35
R607 10K
R601 100
C607 220/35
FUSE
GND
C605 47μ/35
OUTPUT
C601 0.47μ/50
INPUT R-CH

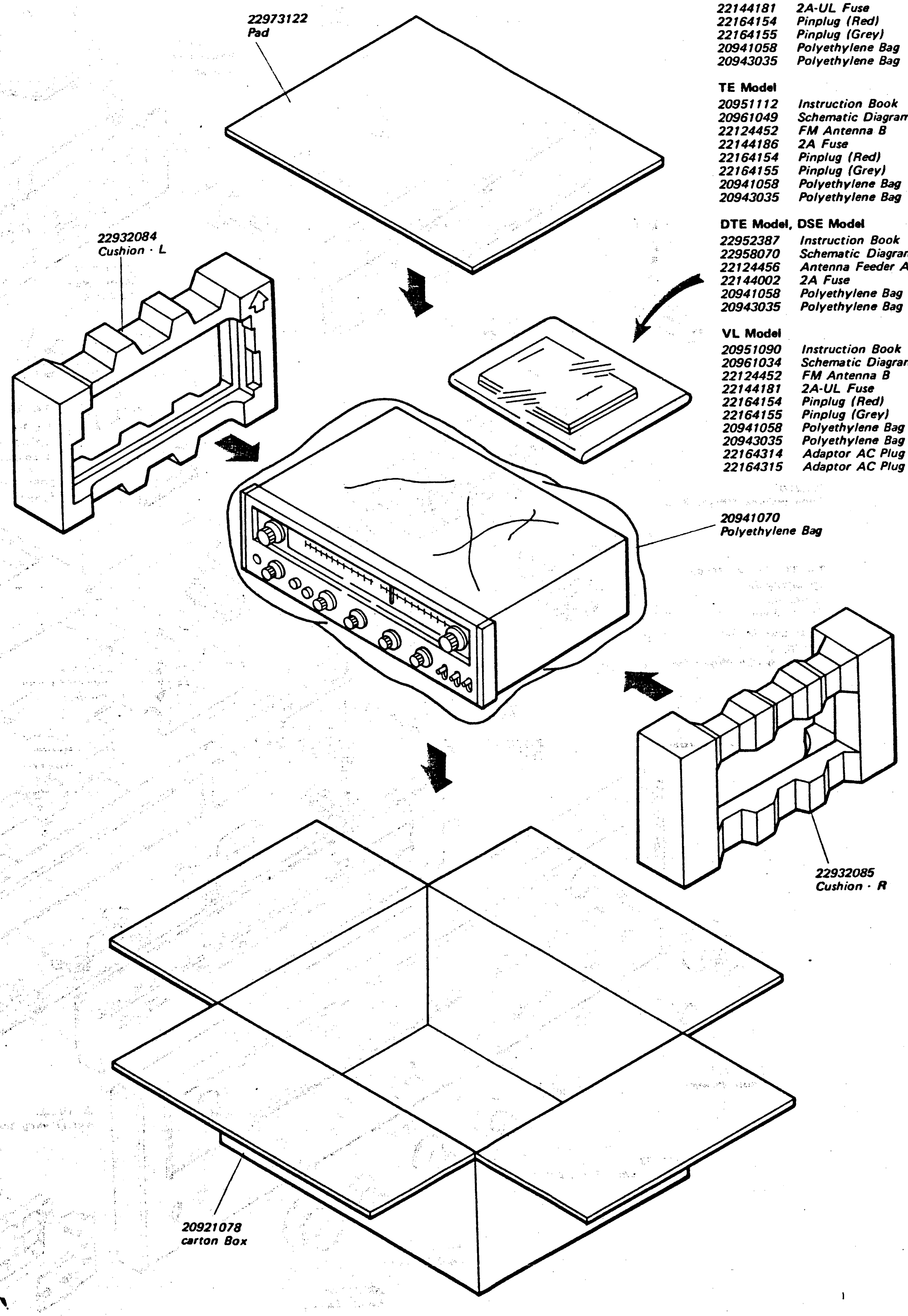
VTC4


R510 4.7K
C522 0.068
C520 0.22
R511 4.7K
C523 0.068
C521 0.22
VR502 100K-A
R515 82K
C517 0.015
C516 0.015
R508 10K
R513 15K
C518 0.033
C519 0.033
R509 10K
R512 15K
OUTPUT R-CH
OUTPUT L-CH
C511 470P
C510 470P
C506 1μ/50
GND
C514 0.0047
C515 0.0047
C501 10μ/35
TR501 2SC-1000-BL
C512 0.0047
C513 0.0047
C502 0.1
R506 560
R504 1M
INPUT R-CH
R502 4.7K
R501 1.8K
VR50 100K-A
R503 4.7K
R505 1M
+B
INPUT L-CH
R507 560
C509 470P
C508 470P
TR502 2SC-1000BL
C503 0.1
C507 1μ/50

STP-22


FM ANTENNA
L-CH AUX INPUT
R-CH AUX INPUT
R-CH AUX
R-CH PHONO NF
L-CH AUX
L-CH PHONO NF
Fitup variable condenser
L-CH REC OUTPUT
R-CH REC OUTPUT
R-CH INPUT
L-CH INPUT
FM +B
AM +B
AM OUT
AM ANTENNA
+B
L-CH FM OUT
R-CH FM OUT
VOLUME
R-CH NF
R-CH LOUDNESS
MEMU AM OUTPUT
MEMU FM OUTPUT
BALANCE
L-CH LOUDNESS
VOLUME L-CH NF
+B
INDICATOR +B
FM MONO
R-CH OUTPUT
INDICATOR
L-CH OUTPUT
GND
BALANCE
TA7054S

12. PACKING


22973122
Pad
22932084
Cushion · L
20941070
Polyethylene Bag
22932085
Cushion · R
20921078
carton Box

TA Model, TC Model

20951090	Instruction Book
20961034	Schematic Diagram
22124452	FM Antenna B
22144181	2A-UL Fuse
22164154	Pinplug (Red)
22164155	Pinplug (Grey)
20941058	Polyethylene Bag
20943035	Polyethylene Bag

TE Model

20951112	Instruction Book
20961049	Schematic Diagram
22124452	FM Antenna B
22144186	2A Fuse
22164154	Pinplug (Red)
22164155	Pinplug (Grey)
20941058	Polyethylene Bag
20943035	Polyethylene Bag

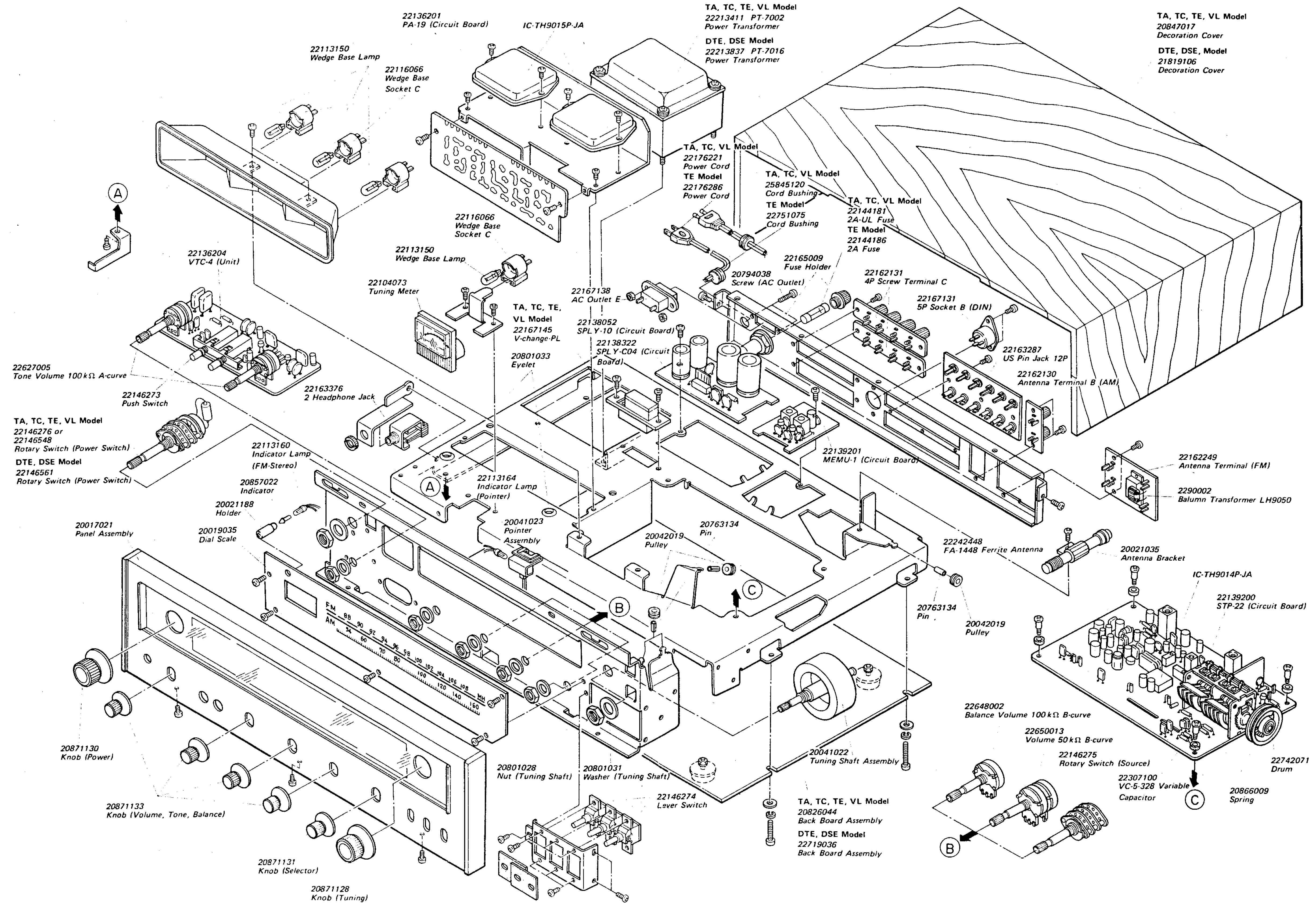
DTE Model, DSE Model

22952387	Instruction Book
22958070	Schematic Diagram
22124456	Antenna Feeder Assembly
22144002	2A Fuse
20941058	Polyethylene Bag
20943035	Polyethylene Bag

VL Model

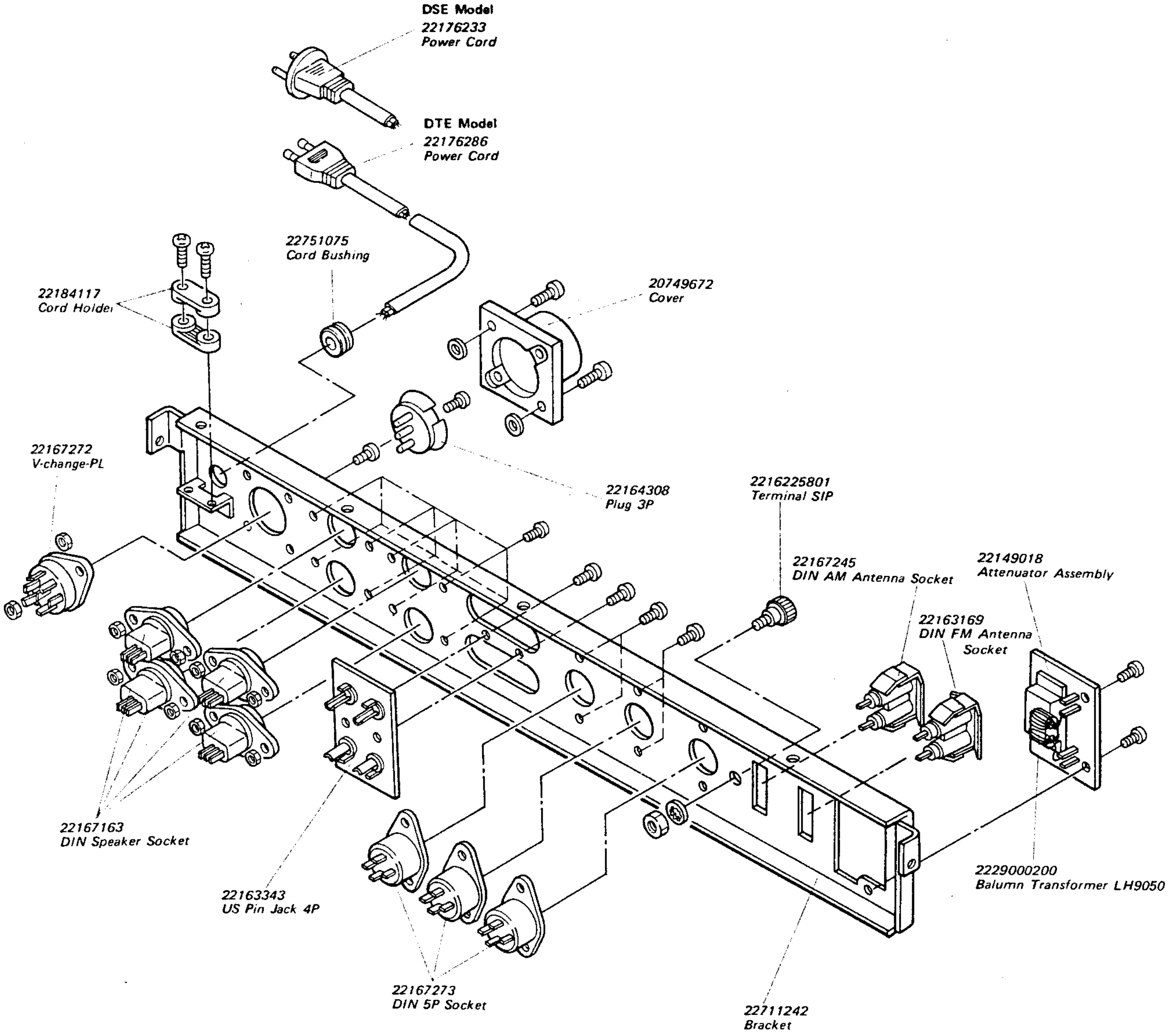
20951090	Instruction Book
20961034	Schematic Diagram
22124452	FM Antenna B
22144181	2A-UL Fuse
22164154	Pinplug (Red)
22164155	Pinplug (Grey)
20941058	Polyethylene Bag
20943035	Polyethylene Bag
22164314	Adaptor AC Plug
22164315	Adaptor AC Plug

13. EXPLODED VIEW


22136201
PA-19 (Circuit Board)
IC-TH9015P-JA
TA, TC, TE, VL Model
22213411 PT-7002
Power Transformer
DTE, DSE Model
22213837 PT-7016
Power Transformer
TA, TC, TE, VL Model
20847017
Decoration Cover
DTE, DSE, Model
21819106
Decoration Cover
22113150
Wedge Base Lamp
22116066
Wedge Base
Socket C
A
22116066
Wedge Base
Socket C
22113150
Wedge Base Lamp
TA, TC, VL Model
22176221
Power Cord
TE Model
22176286
Power Cord
TA, TC, VL Model
25845120
Cord Bushing
TE Model
22751075
Cord Bushing
TA, TC, VL Model
22144181
2A-UL Fuse
TE Model
22144186
2A Fuse
22165009
Fuse Holder
22136204
VTC-4 (Unit)
22104073
Tuning Meter
20794038
Screw (AC Outlet)
22162131
4P Screw Terminal C
22167138
AC Outlet E
22167131
5P Socket B (DIN)
TA, TC, TE,
VL Model
22167145
V-change-PL
22138052
SPLY-10 (Circuit Board)
22138322
SPLY-C04 (Circuit
Board)
22163287
US Pin Jack 12P
20801033
Eyelet
22162130
Antenna Terminal B (AM)
22627005
Tone Volume 100kΩ A-curve
22146273
Push Switch
22163376
2 Headphone Jack
TA, TC, TE, VL Model
22146276 or
22146548
Rotary Switch (Power Switch)
DTE, DSE Model
22146561
Rotary Switch (Power Switch)
22113160
Indicator Lamp
(FM-Stereo)
22139201
MEMU-1 (Circuit Board)
22162249
Antenna Terminal (FM)
20857022
Indicator
A
22113164
Indicator Lamp
(Pointer)
2290002
Balumn Transformer LH9050
20021188
Holder
20017021
Panel Assembly
20019035
Dial Scale
20041023
Pointer
Assembly
20042019
Pulley
20763134
Pin
22242448
FA-1448 Ferrite Antenna
20021035
Antenna Bracket
C
IC-TH9014P-JA
B
22139200
STP-22 (Circuit Board)
20763134
Pin
20042019
Pulley
FM 88 90 92 94 96 98 100 102 104 106 108 MH
AM 54 60 70 80 100 120 140 160
22648002
Balance Volume 100kΩ B-curve
22650013
Volume 50kΩ B-curve
20871130
Knob (Power)
22146275
Rotary Switch (Source)
22742071
Drum
20801028
Nut (Tuning Shaft)
20801031
Washer (Tuning Shaft)
20041022
Tuning Shaft Assembly
22307100
VC-5-328 Variable
Capacitor
C
20866009
Spring
22146274
Lever Switch
20871133
Knob (Volume, Tone, Balance)
TA, TC, TE, VL Model
20826044
Back Board Assembly
DTE, DSE Model
22719036
Back Board Assembly
B
20871131
Knob (Selector)
20871128
Knob (Tuning)

13. EXPLODED VIEW

DTE, DSE Model only


DSE Model
22176233
Power Cord
DTE Model
22176286
Power Cord
22751075
Cord Bushing
22184117
Cord Holder
20749672
Cover
22167272
V-change-PL
22164308
Plug 3P
2216225801
Terminal SIP
22167245
DIN AM Antenna Socket
22149018
Attenuator Assembly
22163169
DIN FM Antenna
Socket
22167163
DIN Speaker Socket
22163343
US Pin Jack 4P
2229000200
Balumn Transformer LH9050
22167273
DIN 5P Socket
22711242
Bracket

14. PARTS LIST

Schematic Location	Parts No.	Description
IC TRANSISTOR & DIODE		
		IC-TA-7046P-JA
		IC-TA-7054P-JA
		IC-TH-9014P-JA
		IC-TH-9015P-JA
TR101		FET-2SK19-Y
TR102		TR-2SC785-R
TR103		TR-2SC394-O
TR201		TR-2SC380-O
TR202		TR-2SC941-O
TR203, 251		TR-2SC371
D201, 202, 203, 250, 251		DD-IN60
D901		DD-IS-1718
TR250		TR-2SC380-R
TR-501, 502		2SC-1000BL
D801	22115139	10DS-2 rectifier
D802	22115018	10DC-2 Rectifier
COIL & TRANSFORMER		
IT250	22265639	IT-6639 IF-transformer
IT201	22265588	IT-2107 IF-transformer
IT202	22265638	IT-2207 IF-transformer
IT205	22267297	IT-2303 IF-transformer
IT251	22264617	IT-5617 IF-transformer
IT203	22264059	IT-1108 IF-transformer
IT204	22266302	IT-1307 IF-transformer
L201	22245206	RT-7111 Oscillatar AM
L101	22292025	RT-8015
L102	22294221	RT-8014
L103	22295015	RT-8013
L104	22291049	RC-408 RF-Coil
T301, 302	22232118	ST-1004 MPX transformer
T303	22232119	ST-3004 MPX transformer
L202	22241024	CH-3501 Ferrite coil 22μH
L203	22291041	CH-100M Ferrite coil 10μH
	22242448	FA-1448 Ferrite antenna
CAPACITOR		
C229, 401, 402, 506, 507	22448109	1μF 50WV Electric Capacitor

Schematic Location	Parts No.	Description
C219, 302	22446479	4.7μF 25WV Electric Capacitor
C212, 214, 223, 303, 405, 406	22445100	10μF 16WV Electric Capacitor
C403, 404, 407, 408, 501, 609, 610	22447100	10μF 35WV Electric Capacitor
C306, 307	22442101	100μF 6.3WV Electric Capacitor
C301	22443101	100μF 10WV Electric Capacitor
C227, 901	22443221	220μF 10WV Electric Capacitor
C601, 602	22448478	0.47μF 50WV Electric Capacitor
C603, 604, 605, 606	22447470	47μF 35WV Electric Capacitor
C607, 608	22447221	220μF 35WV Electric Capacitor
C805, 806	22446102	1000μF 25WV Electric Capacitor
C805, 806	22430025	2200μF 25WV Electric Capacitor
C807, 808	22430015	1000μF 35WV Electric Capacitor
C106	22361109	1 PF ±0.5 Ceramic Capacitor
C232, 250	22361509	5 PF ±0.5 Ceramic Capacitor
C105, 231	22361100	10 PF ±0.5 Ceramic Capacitor
C110	22360131	10 PF KCH Ceramic Capacitor
C111	22360212	20 PF KCH Ceramic Capacitor
C113	22360231	20 PF KSH Ceramic Capacitor
C109	22362150	15 PF Ceramic Capacitor
C117	22362220	22 PF Ceramic Capacitor
C205	22362470	47 PF Ceramic Capacitor
C218, 224, 225	22362271	270 PF Ceramic Capacitor
C107	22341102	0.001μF 50WV Ceramic Capacitor

Schematic Location	Parts No.	Description
C102	22341222	0.0022µF 50WV Ceramic Capacitor
C103, 108	22341472	0.0047µF 50WV Ceramic Capacitor
C112, 201, 202, 203, 204, 213, 216	22341103	0.01µF 50WV Ceramic Capacitor
C104, 115, 208 210, 211	22341223	0.022µF 50WV Ceramic Capacitor
C206, 215, 217	22341333	0.033µF 50WV Ceramic Capacitor
C114	22341403	0.040µF 50WV Ceramic Capacitor
C251	22362101	100 PF Ceramic Capacitor
C801, 802, 803, 804	22340044	0.0022µF 250V Ceramic Capacitor
C228	22391361	360 PF RE: Polyethylene Capacitor
C314	22392332	3300 PF RE: Polyethylene Capacitor
C311, 312	22392472	4700 PF RE: Polyethylene Capacitor
C314	22392332	3300 PF RE: Polyethylene Capacitor
C311, 312	22392472	4700 PF RE: Polyethylene Capacitor
C411, 412	22373152	0.0015µF Mylar Capacitor
C315	22373222	0.0022µF Mylar Capacitor
C512, 513, 514, 515, 226, 409, 410	22373472	0.0047µF Mylar Capacitor
C304, 305	22373682	0.0068µF Mylar Capacitor
C207, 209, 221, 230	22373103	0.01µF Mylar Capacitor
C222	22373223	0.022µF Mylar Capacitor
C502, 503	22373104	0.1µF Mylar Capacitor
C516, 517	22373153	0.015µF Mylar Capacitor
C518, 519	22373333	0.033µF Mylar Capacitor
C520, 521	22373224	0.22µF Mylar Capacitor
C522, 523	22373683	0.068µF Mylar Capacitor
C413, 414		
RESISTER		
R708	22650013	Volume 50KΩ B-curve

Schematic Location	Parts No.	Description
R903	22570008	Metal oxide film resistor 680M 1W
R801	22500040	Cement type 330Ω 3W
R802	22570011	Metal film resistor 68Ω 1W
R709	22648002	Balance Volume 100KΩ B-curve
R303	22658152	Half Vol 330Ω
R501, 502	22627005	Tone Volume 100KΩ A-curve
R107, 108, 219 221, 227, 228 601, 602, 901	22544101	100 ohm ¼W ± 1.0% Carbon Resistor
R106	22544151	150 ohm ¼W ± 1.0% Carbon Resistor
R213, 226	22544221	220 ohm ¼W ± 1.0% Carbon Resistor
R102	22544271	270 ohm ¼W ± 1.0% Carbon Resistor
R103, 220, 701	22544331	330 ohm ¼W ± 1.0% Carbon Resistor
R208, 212 603, 604	22544471	470 ohm ¼W ± 1.0% Carbon Resistor
R506, 507, 213	22544561	560 ohm ¼W ± 1.0% Carbon Resistor
R211	22544821	820 ohm ¼W ± 1.0% Carbon Resistor
R216, 222, 223 204, 711, 712	22544102	1K ohm ¼W ± 0.1% Carbon Resistor
R230	22544152	1.5K ohm ¼W ± 1.0% Carbon Resistor
R302, 501	22544182	1.8K ohm ¼W ± 1.0% Carbon Resistor
R111, 201, 206, 214, 215, 251, 253, 415, 416, 713, 714	22544222	2.2K ohm ¼W ± 1.0% Carbon Resistor
R105, 229	22544332	3.3K ohm ¼W ± 1.0% Carbon Resistor
R202, 413, 414	22544392	3.9K ohm ¼W ± 1.0% Carbon Resistor
R411, 412	22544562	5.6K ohm ¼W ± 1.0% Carbon Resistor
R218, 224, 225	22544822	8.2K ohm ¼W ± 1.0% Carbon Resistor

Schematic Location	Parts No.	Description
R231, 301, 403, 404, 508, 509, 607, 608, 702, 703	22544103	10K ohm ¼W ± 1.0% Carbon Resistor
R110, 210, 217	22544223	22K ohm ¼W ± 1.0% Carbon Resistor
R112, 113	22544333	33K ohm ¼W ± 1.0% Carbon Resistor
R104	22544473	47K ohm ¼W ± 1.0% Carbon Resistor
R401, 402, 409 410	22544563	56K ohm ¼W ± 1.0% Carbon Resistor
R101, 205, 209	22544104	100K ohm ¼W ± 1.0% Carbon Resistor
R207, 417, 418	22544224	220K ohm ¼W ± 1.0% Carbon Resistor
R250, 252	22544474	470K ohm ¼W ± 1.0% Carbon Resistor
R203, 405, 406	22544564	560K ohm ¼W ± 1.0% Carbon Resistor
R504, 505	22544105	1M ohm ¼W ± 1.0% Carbon Resistor
R502, 503	22544472	4.7K ohm ¼W ± 1.0% Carbon Resistor
R512, 513	22544153	15K ohm ¼W ± 1.0% Carbon Resistor
R704, 707	22544684	680K ohm ¼W ± 1.0% Carbon Resistor
R705, 706	22544823	82K ohm ¼W ± 1.0% Carbon Resistor
R605, 606, 902	22563101	100 ohm ½W Composition Resistor
R904	22563471	470 ohm ½W Composition Resistor
CIRCUIT BOARD UNIT		
	22138052	SPLY-10 (CCT-SPLY-10)
		SPLY-CO4 (CCT-SPLY-CO4)
	22136204	VTC-4 (COT-VTC-4)
	22139201	MEMU-1 (CCT-MEMU-1)
	22136201	PA-19 (CCT-PA-19)
	22139200	STP-22 (CCT-STP-22)

Schematic Location	Parts No.	Description
ELECTRICAL PARTS		
CR301, 302	22134065	RC-Module CR-T-01
LC301	22135002	LC-Module LC-P-01
	22142107	PC board (STP-22-PCB)
C101	22307100	Variable capacitor (VC-5-328)
S501	22146273	Push Switch (MFR)
S702	22146275	Rotary Switch (SOURCE)
S703, 704, 705	22146274	Lever Switch (Loudness MODE TAEE MONITOR)
	22144002	2A-Fuse (PROTECTOR)
	22163175	2 Headhore jack
	22104073	Tuningmeter
	22113160	Indicator lamp (FM Stereo)
	22113150	Wedge base lamp
	22116066	Wedge base socket C
	22113164	Indicator lamp (Pointer)
	22309071	Cylinder trimmer (AT 1-39)
MECHANISM AND CABINET PARTS		
	20842029	Leg Assembly
	20791034	Washer (Back Board)
	20017021	Panel Assembly
	20041022	Tuning Shaft Assembly
	20885034	Reflexsheet (Wave Type)
	20885035	Reflex sheet
	20019035	Dial Scale
	20021035	Antenna Bracket
	22742071	160L Drum
	20866009	Spring (Drum)
	20042019	Pulley
	20763134	Pin (Pulley)
	20857022	Indicator (FM Stereo)
	20021188	Holder (FM Stereo Lamp)
	20871128	Knob (Tuning)
	20871130	Knob (Power)
	20871131	Knob (Selector)
	20871133	Knob (Volume Tone Balance)
	20801028	Nut (Tuning Shaft)
	20801031	Washer (Tuning Shaft)
	20021194	Clamp (Dial Scale)
	20041023	Pointer Assembly

Schematic Location	Parts No.	Description
	20801033	Eyelet
ACCESSORY		
	20941058	Polyethylene Bag (Accessory)
	20943035	Polyethylene Bag
WIRE (CABLE)		
	22177009	1.5C-2V (Coaxial Cable)

For TA, TC, TE, VL Model

COIL & TRANSFORMER		
	22213411	PT-7002 Power Transformer
ELECTRICAL PARTS		
S701	22146548	Rotary Switch (Power SW)
	22165009	Fuse Holder
	22162131	4P SCREW TERMINAL C
	22167131	5P Socket B (DIN REC)
	22163287	US Pin Jack 12P
	22162130	Antenna Terminal 1-B (AM)
	20051042	Antenna Terminal (FM)
	22167145	V-CHANGE-PL
MECHANISM AND CABINET PARTS		
	20847017	Decoration Cover
	20826044	Back Board Assembly
ACCESSORY		
	22164154	Pinplug (Red)
	22164155	Pinplug (Grey)
	22124452	FM Antenna B

Schematic Location	Parts No.	Description

For TA, TC, VL Model

RESISTOR SOLID ½W		
R710	22563225	2.2M ohm
ELECTRICAL PARTS		
S701	22146548	Rotary Switch (Power SW)
	22176221	UL Power Supply Cord
	22167138	AC Outlet E
	22144181	2A-UL Fuse (Power Supply)
MECHANISM AND CABINET PARTS		
	25845120	Cord Bushing (Power Supply Cord)
	20794038	Screw (AC Outlet)
ACCESSORY		
	20951090	Instruction Book
	20961034	Schematic Diagram

For TE Model

MECHANISM AND CABINET PARTS		
	20031015	Cover Plate

For TE, DTE Model

ELECTRICAL PARTS		
	22176286	Power Cord

For TE, DTE, DSE Model

MECHANISM AND CABINET PARTS

Schematic Location	Parts No.	Description
	22751075	Bushing

For DTE, DSE Model

COIL & TRANSFORMER

Schematic Location	Parts No.	Description
	22213837	PT-7016 Power Transformer

ELECTRICAL PARTS

Schematic Location	Parts No.	Description
S701	22146561	Rotary Switch (Power SW)
	22144178	0.2A-FUSE-SEMKO
	22144134	1A-FUSE-SEMKO
	22144191	2A-FUSE-SEMKO
	22167272	V-CHANGE-PL
	22164308	Plug-3P
	22162258	Terminal SIP
	22167163	DIN Speaker Socket
	22163343	US Pin Jack 4P
	22167245	DIN AM Antenna Socket
	22163169	DIN FM Antenna Socket
	22149018	Attenuator Assembly
	22167273	DIN 5P Socket

MECHANISM AND CABINET PARTS

Schematic Location	Parts No.	Description
	21819106	Decoration Cover
	22719036	Back Board Assembly
	22711242	Bracket
	20749672	Cover (V-CHANGE-PL)
	22184117	Cord Holder (Power Cord)

ACCESSORY

Schematic Location	Parts No.	Description
	22952387	Instruction Book
	22958070	Schematic Diagram
	22124454	Antenna Feeder Assembly
	22144002	2A-Fuse

For DSE Model

ELECTRICAL PARTS

Schematic Location	Parts No.	Description
	22176233	Power Cord

For VL Model

ACCESSORY

Schematic Location	Parts No.	Description
	22164314	AC-Plug Adaptor
	22164315	AC-Plug Adaptor

Original

Toshiba

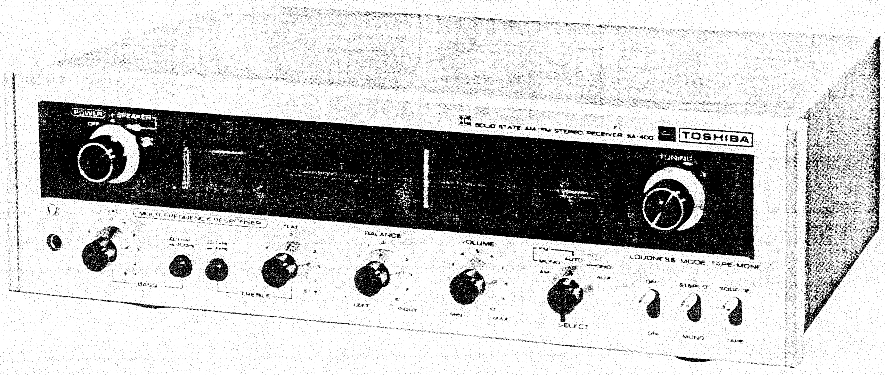
TOSHIBA AM／FM STEREO RECEIVER

SERVICE DATA

MODEL SA-400

FILE NO. 173-004

SUPPLEMENT A


POWER
SPEAKER
SOLID STATE AM/FM STEREO RECEIVER SA-400
TOSHIBA
TUNING
BALANCE
VOLUME
LOUDNESS
MODE
TAPE MONI
SELECT
BASS
TREBLE

Wiring of Power Supply Circuit is modified as follows:

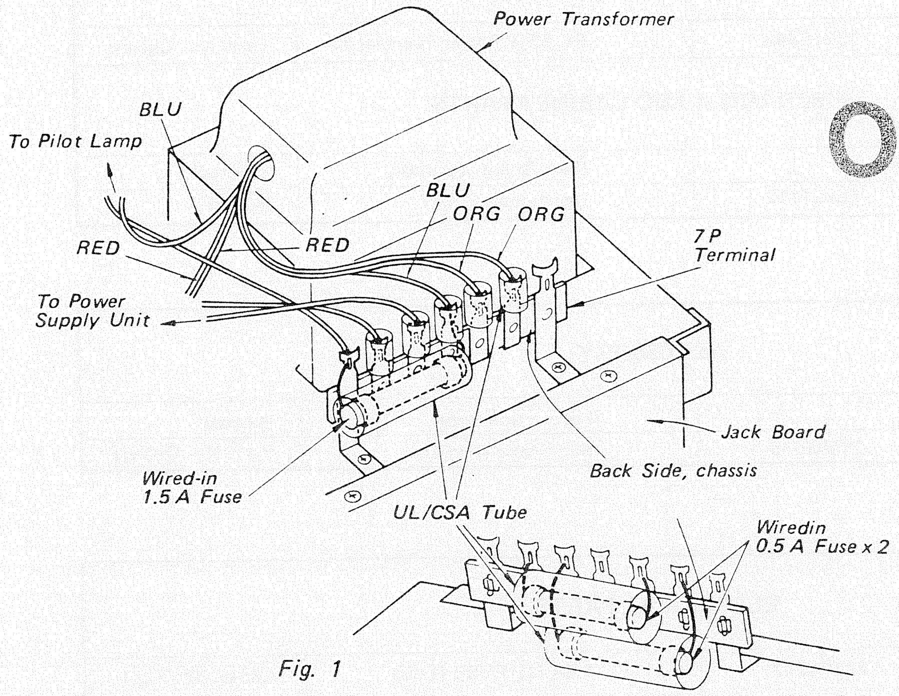

Power Transformer
BLU
To Pilot Lamp
BLU
ORG
ORG
RED
RED
7 P
Terminal
To Power
Supply Unit
Jack Board
Back Side, chassis
Wired-in
1.5 A Fuse
UL/CSA Tube
Wiredin
0.5 A Fuse x 2

Fig. 1

Original

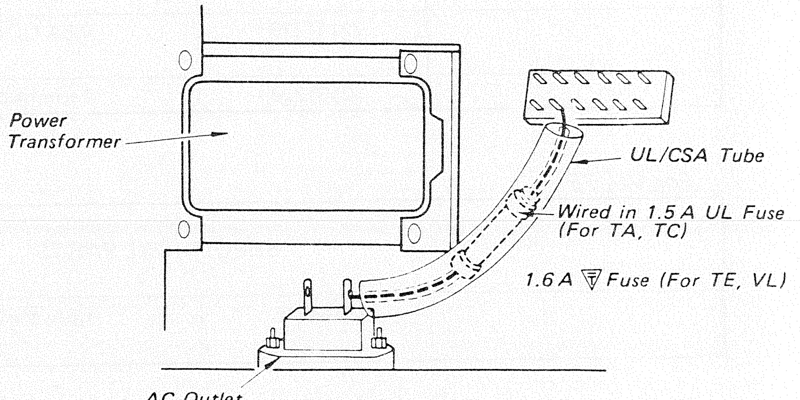

Power
Transformer
UL/CSA Tube
Wired in 1.5 A UL Fuse
(For TA, TC)
1.6 A Fuse (For TE, VL)
AC Outlet

Fig. 2

TOKYO SHIBAURA ELECTRIC CO., LTD.

2-1, 5-CHOME, GINZA, CHUO-KU, TOKYO, JAPAN

PARTS LIST

Parts No. From	Parts No. To	Description	Remarks
IC			
		IC TA-7046P-JA or TA-7142P-JA	Added
ELECTRICAL PARTS			
22163175	22163155	Headphone Jack	Parts No. Change
22113164	22113237	Indicator Lamp (Pointer)	Parts No. Change
22113160	22113238	Indicator Lamp (FM-ST)	Parts No. Change

For TA, TC TE, VL Model

TRANS FORMER			
22213411	22213848	PT-7018 Power Transformer	Parts No. Change
MECHANISM AND CABINET PARTS			
20826044		Back Board Assembly	Deleted
	20951112	Instruction Book	Added

For TA, TC, TE, VL, Model

ACCESSORY			
20951090		Instruction Book	Deleted
20961034	20961049	Schematic Diagram	Parts No. Change

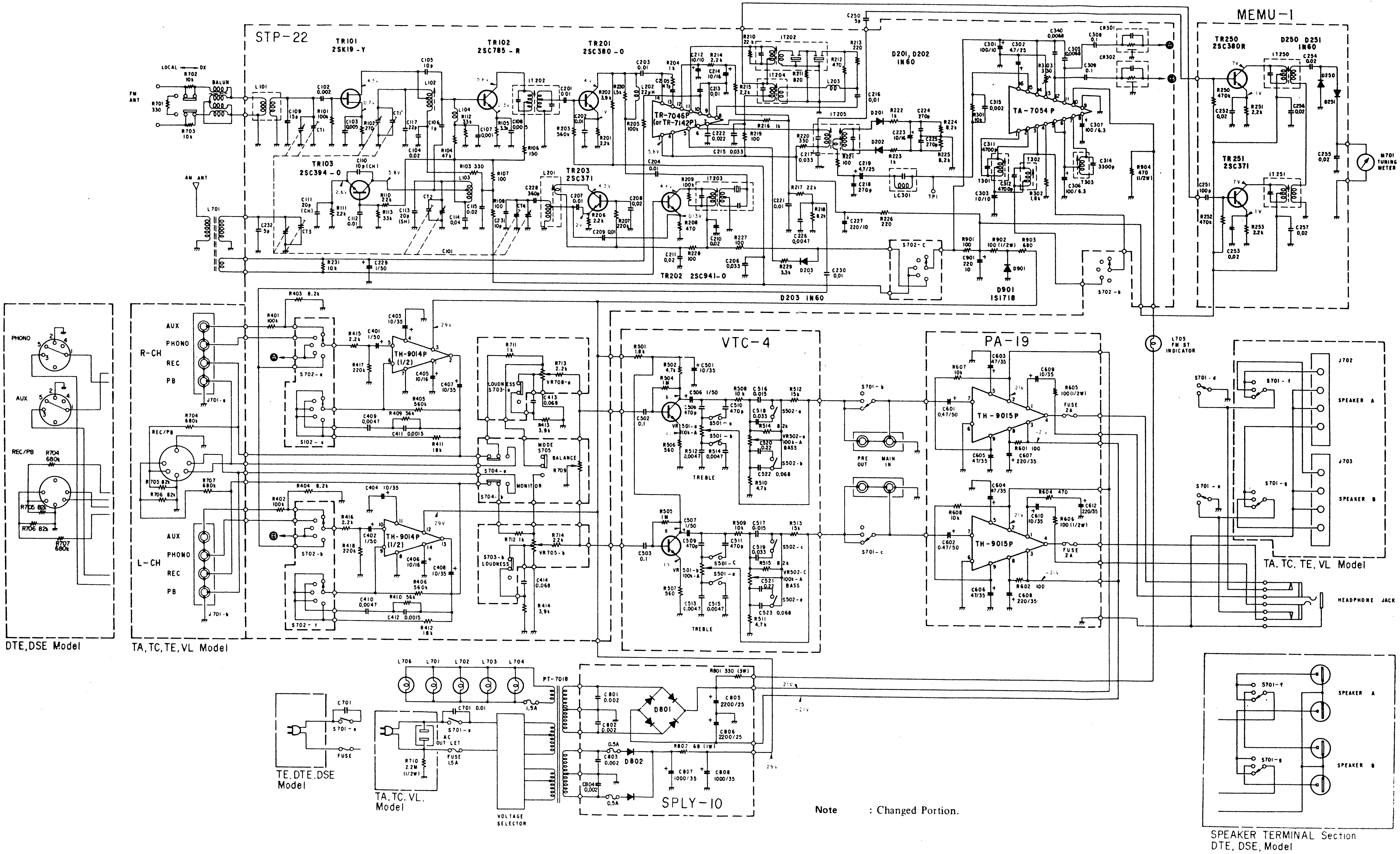
For TA, TC, Model

ELECTRICAL PARTS			
	22144217	1.5A UL FUSE (Lead type)	Added, See Fig.1 Fig. 2
	22144218	0.5A UL FUSE (Lead type)	Added, See Fig.1
	22161329	Terminal Strip 5P	Added, See Fig.1

For VL, TE

ELECTRICAL PARTS			
	22144216	1.6A ▽ FUSE (Lead type)	Added, See Fig.2

CIRCUIT SCHEMATIC GENERAL


STP-22
TR101 2SK19-Y
TR102 2SC785-R
TR201 2SC380-O
TR103 2SC394-O
TR203 2SC371
TR202 2SC941-O
TR-7046P (or TR-7142P)
TA-7054P
D201, D202 1N60
D203 1N60
D901 1S1718
MEMU-1
TR250 2SC380R
TR251 2SC371
D250 D251 1N60
M701 TUNING METER
L705 FM ST INDICATOR
FM ANT
AM ANT
LOCAL DX
BALUN
VTC-4
PA-19
TH-9014P (1/2)
TH-9015P
R-CH
L-CH
AUX
PHONO
REC
PB
REC/PB
LOUDNESS S703-a
S703-b LOUDNESS
MODE S705
BALANCE
MONITOR
TREBLE
BASS
PRE OUT
MAIN IN
SPEAKER A
SPEAKER B
J702
J703
HEADPHONE JACK
FUSE 2A
TA, TC, TE, VL Model
DTE, DSE Model
TA, TC, TE, VL Model
SPLY-10
D801
D802
PT-701B
L706 L701 L702 L703 L704
VOLTAGE SELECTOR
AC OUT LET
FUSE 1.5A
TE, DTE, DSE Model
TA, TC, VL. Model
SPEAKER TERMINAL Section DTE, DSE, Model

Note : Changed Portion.